

FACT SHEET FOR NPDES PERMIT WA-000179-1(I)

SHELL OIL PRODUCTS US

Shell Seattle Terminal

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 RCW which defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits (Chapter 173-220 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty (30) days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see *Appendix A--Public Involvement* of the fact sheet for more detail on the public notice procedures). Reasonable potential calculations are enclosed in Appendix B. Glossary is enclosed in Appendix C. Site maps are enclosed in Appendix D.

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. Comments and the resultant changes to the permit will be summarized in *Appendix E--Response to Comments*.

GENERAL INFORMATION	
Applicant	Shell Seattle Terminal
Facility Name and Address	Shell Seattle Terminal 2555 – 13 th Avenue SW Seattle, WA 98134
Type of Facility	Bulk Petroleum Storage and Distribution
SIC Code	5171
Discharge Location	Waterbody Name: Duwamish West Waterway Latitude: 47° 34' 34" N Longitude: 122° 21' 02" W
Water Body ID Number	04-09-09

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

INDUSTRIAL PROCESS

The Shell Seattle Terminal (Formerly Equilon) comprises 20.5 acres of land on the north central part of the island (Figure 1). The facility is divided into three parcels: the main terminal and tank farm (2555 13th Avenue SW), the north tank farm (1835 13th Avenue SW), and the shoreline manifold area and dock (1711 13th Avenue SW). Shell Oil Products US operates both the light oils distribution terminal and lubricants facility on the property.

The main terminal and tank farm are located on 17.5 acres lying west of 13th Avenue SW, south of SW Florida Street, east of 16th Avenue SW and north of SW Lander Street. The main facility consists of two office buildings, a warehouse, a former bottle filling building, a blending building, a light oil truck loading rack, a lube oil truck loading rack, pipeline receiving facilities, rail receiving facilities, two regulated underground storage tanks (commingled tank and vapor drop out tank), 83 aboveground product storage tanks, piping, pumps, a boiler, and a garage. The main terminal is constructed on fill material. The main terminal receives primarily light oils (fuel), via barge, rail, truck and pipe line (Olympic Pipe Line from Anacortes), and lube oils by truck and rail. Lube operations currently include storage and distribution.

The north tank farm comprises 2.5 acres immediately northwest of the intersection of 13th Avenue SW and SW Florida Street. This tank farm is constructed on fill material. The tank farm contains two aboveground storage tanks, both about 1,500,000 gallons in size, which currently store diesel fuel. The tanks receive product via pipelines from the Olympic Pipe Line, the main tank farm, and the dock. Product from these two tanks is also transferred to both the main terminal and the dock.

The shoreline manifold and dock lie on 0.5 acres of land on the north side of the intersection of 13th Avenue SW and SW Massachusetts Street. Elliott Bay is adjacent to the north edge of the shoreline manifold area. Some of the manifold area is not paved. The area contains manifolds controlling the flow of product between the tank farms and the dock. The dock lies 250 feet to the west of the shoreline manifold area and extends 590 feet into Elliott Bay, and is known as Pier 15, which is shared by Rainier Petroleum Company. Combinations of barges and ships are handled at the dock.

The amount of product handled fluctuates seasonally with sale price and number of participating distributors purchasing from the facility. Products distribution through the loading rack is via tanker trucks.

The loading equipment of the loading rack in the main terminal is equipped with a vapor recovery unit for the control of gasoline vapors. The recovered vapor condensate is returned into the product tanks.

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Petroleum Products

Shell Seattle Terminal handles two main types of petroleum products: light oils and lubricating oils. Light oils include three grades of gasoline—aviation gasoline, jet fuel, and middle distillates (e.g. diesel #2).

Bulk lubricating oils are received as several grades of base stock (e.g. solvent neutral oils and pale oils). These base oils consist of naphthenic, paraffinic or both, and light to heavy petroleum distillates. The facility has blended, distributed, and packaged lubricating products since 1948. Lubricating products blending ceased in March 1994. Hard greases are received prepackaged and are distributed by the Shell Seattle Terminal.

Base oils are received by truck and rail, blended, and distributed via truck. Historically, lubricating base oils have also been shipped via rail. Light oils are received via the Olympic Pipe Line, marine tanker or barge or by rail. They are stored on site and shipped via truck or marine vessel, tanker or barge.

Chemical and Additive Management

The facility has used in the past very small amounts of additives to blend both light oil and lubricating oil products. These additives generally consist of detergents, anti-rust compounds, lubricants, viscosity index improvers, anti-foaming agents, and gasoline additives.

TANKS

Storage tanks were first installed on site in 1947 and continue to be installed on an as needed basis for expansion. The last tank installed was in 1992. Some tanks have been retrofitted with double bottoms throughout the years. Dome covers have been installed over the original open floating roof to eliminate stormwater from seeping into the product tank. The total bulk storage capacity for the facilities at the north and main tank farm for the facility is 713,000 barrels (bbl). This includes 84 aboveground storage tanks. Tank sizes range from 4200-gallon capacity to 4,746,000-gallon capacity.

The tanks are connected via twelve transfer lines to the dock. Transfer points are at two locations on the east side of the pier. Product movement is controlled at these two points by valves on individual lines. Also block valves control movement of product off the pier at the shore end, as well as in the tank farm 1/4 miles south (Figure 2). Most of these lines are buried underground. A small portion of the line is exposed aboveground.

WASTEWATER AND EXISTING TREATMENT SYSTEMS

Stormwater from the pier is discharged to the sanitary sewer system through Rainier Petroleum Company's discharge permit with Metro King County. The facility does not receive or treat ballast water or gray water from ships.

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Wastewater generated from the facility is mostly stormwater which has been impacted by daily industrial activities, boiler blowdown, sump overflow, condensed cooling water, and washdown rinse water from loading racks. According to the facility, tank drawn water is currently collected and hauled back to the Anacortes Shell Refinery or disposed by a regulated treatment storage or disposal facility. The storm runoff and the washdown rinse water from the light products loading racks are collected and pretreated through an oil/water separator (OWS), equalization tank, and activated carbon system. The installation of this system was completed in the winter of 1994/1995. The storm runoff from the south tank farms, from most areas of the site including lube oil loading rack and the pretreated water from the light product loading rack are gravity fed to the main OWS. Most of the areas in the main terminal are paved, including the lube oil tank farms and excluding the main and north tank farms. The main OWS is an API OWS which consists of five chamber compartments with an excelsior filtration media and calcium carbonate rocks installed in the last chamber compartment prior to the outfall (Outfall 001).

Truck/car detergent wash water and domestic wastewater are discharged to the Metro King County system.

DISCHARGE OUTFALLS

The facility has a total of two outfalls. Outfall 001 is the main oil/water separator (OWS) outlet. Outfall 002 is the outlet of another OWS located adjacent to or north of the warehouse.

Outfall 001 discharges treated effluent from the main OWS to the Duwamish West Waterway via city storm sewers (SW Lander CSO/SD 105). This wastewater is impacted by industrial activities. Therefore, requirements will be set in this permit to regulate this discharge.

Outfall 002 discharges treated storm runoff collected in an OWS. This OWS receives runoff from the roadway and parking area for trucks which are waiting to be loaded and unloaded from the warehouse for full package container products. The gravity fed OWS for this outfall consists of three compartments. Outfall 002 discharges storm water runoff into the city of Seattle storm drain along SW 16th Avenue which ultimately discharges to the Duwamish West Waterway.

Storm water runoff from the north tank farm infiltrates into the ground. No surface water runoff has been reported for this area. Therefore, no monitoring requirement will be included except for BMPs. This runoff will be addressed in the facility's Stormwater Pollution Prevention Plan (SWPPP).

PERMIT STATUS

The previous permit for this facility was issued on July 31, 1997. The previous permit placed effluent limitations on oil and grease, total suspended solids (TSS), benzene, ethyl-benzene, and pH.

An application for permit renewal was submitted to the Department on December 13, 2001, and accepted by the Department on July 9, 2002.

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SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility last received an inspection on April 26, 2001. During the history of the previous permit, the Permittee had the following exceedances based on Discharge Monitoring Reports (DMRs) submitted to the Department:

<u>Outfall</u>	<u>Parameters</u>	<u>Type of violation</u>	<u>Exceedance Month</u>
001	Oil & Grease	Daily Maximum	01/99
002	Oil & Grease	Daily Maximum	1/00
	Oil & Grease	Monthly Average	1/00
001	TSS	Daily Maximum	12/00
	TSS	Monthly Average	01/01
001	pH	Outside the range of 6.5 to 8.5 standard units	12/97 through 7/98, 9/98 through 01/00, 3/00 through 6/00, 9/00 through 10/00, 7/01, 9/01

The TSS violations above have already been corrected. On August 25, 2000, the Department issued a Notice of Violation (NOV) No. DE 00WQNR-1421 for the pH, and oil & grease violations which occurred during the period of January 1, 1999 through December 31, 1999. On September 8, 2000, Shell Seattle Terminal submitted a response to the above NOV indicating that corrective actions had been taken in January 1999 for the oil & grease violation. The subsequent sample results indicated an oil & grease concentration less than the detection limit. The pH values associated with the above violations were less than the minimum limit of 6.5 standard units. These low readings were due to the naturally acid rainwater which occurs in the northwest region. The facility provided pH data collected for the natural rainwater to support this. Furthermore, the facility also volunteered to provide treatment for pH prior to discharge. The treatment involves adding a catch basin insert filled with calcium carbonate, which is to be placed in an existing cage located in the clearwell of the main oil water separator. The spent calcium carbonate will be replaced as often as required. This proposed treatment method was implemented during spring of 2001. A No Action Order was issued to the facility on January 5, 2001, to close out the above NOV.

WASTEWATER CHARACTERIZATION

The proposed wastewater discharge has been characterized for the following regulated parameters:

Outfall 001

Parameters	Maximum Detected Values () for Outfall 002	Average Detected values	Units
TSS	40 (10)	12.1	mg/L

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Parameters	Maximum Detected Values () for Outfall 002	Average Detected values	Units
pH	7.8 (7.2)		s.u.
Oil & Grease	10.6	3.68	mg/L
BOD	4.19 (3.81)		mg/L
COD	24.7 (30.3)		mg/L
Total Copper (Cu)	31.1 (22.5)	21.5	µg/L
Total Lead (pb)	90.6 (262)	56.6	µg/L
Total Zinc (zn)	224 (97.5)	121.7	µg/L
Total Arsenic (As)	3.27 (<10)	2.5	µg/L
Benzene	3.03	0.75	µg/L
Ethyl Benzene	1.22	0.56	µg/L
TPH-G	51	27.17	µg/L

The stormwater flow reported in the application for Outfall 001 is approximately 11,125 gpd, and Outfall 002 is approximately 3,000 gpd. Condensed cooling water and boiler blow down and sump overflow is estimated to be 2300 gpd, and wash down/rinse water and stormwater from loading areas are estimated to be 825 gpd.

PROPOSED PERMIT LIMITATIONS

Federal and state regulations require that effluent limitations set forth in an NPDES permit must be either technology- or water quality-based. Technology-based limitations are based upon the treatment methods available to treat specific pollutants. Technology-based limitations are set by regulation or developed on a case-by-case basis (40 CFR 125.3, and Chapter 173-220 WAC). Water quality-based limitations are based upon compliance with the surface water quality standards (Chapter 173-201A WAC), ground water standards (Chapter 173-200 WAC), sediment quality standards (Chapter 173-204 WAC), or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992). The more stringent of these two limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis and the limits necessary to meet the rules and regulations of the state of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent.

Some pollutants are not treatable at the concentrations reported and they are not controllable at the source and they do not have a reasonable potential to cause a water quality violation. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Technology-based limitations are set by regulation in the federal effluent guidelines or on a case-by-case basis using Best Professional Judgment (BPJ) when no effluent guidelines exist for an industrial category. Technology-based limits represent the best treatment a facility can achieve consistent with the economic means of the industry as a whole (in the case of effluent guidelines) or of the specific facility being permitted (in the case of BPJ). Technology-based effluent limits are process control parameters or numbers which indicate that a process, which in this case is wastewater treatment, is not functioning properly. All known available and reasonable methods to control toxicants in the Permittee's wastewater are required to be used.

EFFLUENT LIMITATIONS

The technology-based effluent limitations in this permit are as follows:

Outfall	Parameter	Monthly Average	Daily Maximum
001	Oil & Grease	10 mg/L	15 mg/L
	TSS	21 mg/L	33 mg/L
	Ethyl-benzene	--	0.1 mg/L
002	Oil & Grease	10 mg/L	15 mg/L

The oil & grease limit is set consistent with the Department's policy for Direct Discharge which is based on the proven performance of gravity oil/water separators.

The TSS limit has remained unchanged from the previous permit (performance-based limit).

The ethyl benzene limit has remained unchanged from the previous permit.

For Outfall 001, the monitoring frequency for oil & grease, TSS, TPH-G, BTEX will be monthly during the discharge period. The total flow will be required to be estimated during the discharge period. An annual priority pollutant scan is required.

For Outfall 002, the monitoring frequency for oil & grease will be monthly during rainy season. The sample is required to be obtained during the first 60 minutes of a storm or as soon as possible thereafter, taking safety and staffing into consideration, to represent a first flush sample. No monitoring will be necessary during the reporting period if there is no discharge.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established surface water quality standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Surface water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin wide total maximum daily loading study (TMDL).

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NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the state of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the water quality standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The U.S. EPA has promulgated 91 numeric water quality criteria for the protection of human health that are applicable to Washington State (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health.

Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

ANTIDEGRADATION

The Washington State's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

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MIXING ZONES

The water quality standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known available and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria. There are no mixing zones granted to this facility in this permit at this time.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to Duwamish River West Waterway which is designated as a Class "B" receiving water in the vicinity of the outfall. Other nearby point source outfalls include Todd Shipyard and other industries located on Harbor Island. Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall markedly and uniformly exceed the requirements for all or substantially all uses.

The 1994 Section 305(B) report described the Duwamish River as water quality impaired for secondary contact recreation and wildlife habitat, due to ammonia, pH, dissolved oxygen/organic enrichment, thermal modifications, and fecal coliform/other pathogen indicators. These pollutants are attributed to combined sewer overflow events, urban runoff and storm sewers, other sources (unspecified) and natural sources.

The Duwamish River is also included on the 1996 EPA 303(d) list for exceeding dissolved oxygen and fecal coliform water quality standards. The 303(d) list also reports that sediments exceed the sediment quality standards for copper, lead, zinc, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and sediment bioassay.

Chapter 173-201A WAC classifies the Duwamish West Waterway as a freshwater environment. According to the Water Quality Assessment conducted by King County Department of Natural Resources in October 1995, when freshwater inflows exceed 1,000 cfs, the maximum intrusion length of the salt wedge is approximately the East Marginal Way Bridge, regardless of tide height. At low freshwater flows (less than 600 cfs) and tide heights greater than 10 feet above Mean Lower Low Water (MLLW), the salt wedge can extend approximately 16 km upstream from the mouth. As the tide height increases, the salt wedge starts moving upstream and the downstream freshwater flow starts to decay (the two flows oppose each other) until at some point all water is flowing upstream, fresh water and salt water. For this finding, the receiving water in the vicinity of the outfall will be considered marine water in this permit. The chronic testing species for whole effluent toxicity requirement will be those of marine water.

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SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA, 1992).

WATER QUALITY-BASED EFFLUENT LIMITS FOR NUMERIC CRITERIA

The water quality-based effluent limit set in this permit is as follows:

<u>Outfalls</u>	<u>Parameter</u>	<u>Effluent Limit</u>
001	pH	between 6.5 and 8.5 standard units
001	Zinc (TR)	95 µg/L (effective February 1, 2005)

The monitoring frequency for Outfall 001 is daily and for Outfall 002 is monthly.

According to Chapter 173-201A, the Duwamish River West Waterway is classified as fresh water receiving water. The water quality criteria for pH in a Class “B” fresh water environment is between 6.5 and 8.5 standard units.

A reasonable potential to exceed the acute marine water quality criterion for zinc (95 µg/L, total recoverable) was determined during the drafting process of the previous permit. However, the determination was based on one sample reported in the permit application at that time. Although, an effluent limit for zinc was not imposed in the previous permit, a compliance schedule for additional best management practices was set, and continued monitoring was required. The source of zinc was determined in the previous permits to result from truck traffic into the plant. A reasonable potential calculation was performed again using the data submitted between July 1, 1997 and March 2003, to determine whether the effluent concentrations for zinc have a reasonable potential to exceed the water quality criteria as required by 40 CFR 122.44 (d). As illustrated in Appendix B, Attachment I, based on the upper 95th percentile of confidence level of the effluent data (159 µg/L using a log normal distribution), a reasonable potential to exceed the acute marine water quality criterion (95 µg/L) exists. As a result, an effluent limit for zinc will be set in this permit. However, the Department recognizes that the facility may not be able to meet this water quality-based limit at the time the permit is issued to the facility. Therefore, the Department proposes to set a compliance schedule in the permit for the facility to evaluate the current BMPs, conduct source control, and or design a treatment method for zinc as necessary. The effluent limit for zinc will become effective eighteen (18) months from the issuance date of this permit.

The Department will not impose an effluent limit for copper in the permit at this time because of the following reasons: 1) The soil at Harbor Island (superfund site) is known to be contaminated with metals (copper, lead, arsenic, etc.) from the smelter which previously existed there; 2) EPA Region X is currently conducting cleanup activities at the site (More information is presented under the section entitled Ground Water Quality Limitations on page 16 of the Fact Sheet). After the EPA’s cleanup is completed and the contaminated metals are contained on site, the Department will reevaluate the need to impose effluent limits for metals (based on water quality criteria) in the permit. Monitoring-only is required for copper and lead in this proposed permit.

Whole Effluent Toxicity

The water quality standards for surface waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment.

Chronic toxicity tests measure various sublethal toxic responses such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test of an organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of calculating an NOEC, LC₅₀, EC₅₀, IC₂₅, etc. All accredited labs have been provided the most recent version of the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Department Publications Distribution Center (360-407-7472) for a copy. The Department recommends that permittees send a copy of the acute or chronic toxicity sections(s) of their permits to their laboratory of choice.

An effluent characterization for acute toxicity was conducted during the previous permit term and showed toxicity in excess of the acute toxicity performance standard. However, the results of this characterization are not representative of the discharge's potential toxicological effects in the marine receiving water and the effluent characterization for acute toxicity must be repeated. The original effluent characterization used freshwater organisms for acute testing and marine organisms for chronic testing. The low level of dissolved solids in the stormwater samples enhanced the metals toxicity causing fathead minnows in the acute tests to have nearly complete death in 100% effluent at the end of four days. A marine fish, the topsmelt, used in the chronic tests had nearly complete survival in 100% effluent at the end of seven days because the salts used in the test moderated the toxicity from metals. The chronic tests were more sensitive because of the longer duration of exposure and better represented the receiving water which is marine. In order to verify this explanation and assess the effects on mysids, the permit requires the effluent characterization for acute to be repeated with marine organisms. As a result, chronic toxicity testing with marine organisms should also be repeated.

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Shell Seattle Terminal (Harbor Island) Acute WET Test Results as % Survival in 100% Effluent						
Test #	Lab	Sample Date	Start Date	Organism	Endpoint	% Survival
AQTX1518	EVS	11/12/1997	11/13/1997	Daphnid	48-hr survival	0.0%
AQTX1517	EVS	11/12/1997	11/13/1997	Fathead minnow	96-hr survival	0.0%
AQTX1519	EVS	11/17/1997	11/18/1997	Daphnid	48-hr survival	0.0%
AQTX1816	EVS	03/26/1998	03/26/1998	Fathead minnow	96-hr survival	45.0%
AQTX1817	Parametrix	03/31/1998	04/01/1998	Daphnid	48-hr survival	60.0%
AQTX1857	EVS	06/24/1998	06/25/1998	Daphnid	48-hr survival	5.0%
AQTX1858	EVS	06/24/1998	06/24/1998	Fathead minnow	96-hr survival	5.0%
AQTX1975	EVS	09/23/1998	09/23/1998	Daphnid	48-hr survival	95.0%
AQTX1974	EVS	09/23/1998	09/23/1998	Fathead minnow	96-hr survival	100.0%
AQTX002652	Parametrix	07/16/2001 12:30	07/17/2001 16:00	Mysid	24-hr survival	85.0%
AQTX002651	Parametrix	07/16/2001 12:30	07/17/2001 14:45	Topsmelt	96-hr survival	100.0%
AQTX003404	Parametrix	10/10/2001 12:10	10/10/2001 16:20	Mysid	48-hr survival	100%
AQTX003405	Parametrix	10/10/2001 12:10	10/10/2001 16:20	Topsmelt	48-hr survival	98%

Shell Seattle Terminal (Harbor Island) Chronic WET Test Results as NOEC/LOEC in % Effluent							
Sample Date	Start Date	Organism	Test Type	Endpoint	NOEC	LOEC	MDSp
11/12/1997	11/13/1997	Topsmelt	Growth-survival (7d)	7-day Survival	100	> 100	
				Biomass	100	> 100	13.55%
				Weight	100	> 100	13.55%
12/03/1997	12/04/1997	Mussel	Development-Survival	Proportion Normal	100	> 100	10.37%
				Proportion Survived	100	> 100	5.30%
03/26/1998	03/26/1998	Mussel	Development-Survival	Proportion Normal	100	> 100	6.64%
				Proportion Survived	100	> 100	13.55%
03/26/1998	03/26/1998	Topsmelt	Growth-Survival (7d)	7-day Survival	100	> 100	5.99%
				Biomass	100	> 100	17.20%
				Weight	100	> 100	13.31%
06/24/1998	06/24/1998	Mussel	Development-Survival	Proportion Normal	15.5	31.1	2.91%
				Proportion Survived	15.5	31.1	8.52%
06/24/1998	06/24/1998	Topsmelt	Growth-Survival (7d)	7-day Survival	100	> 100	3.20%
				Biomass	100	> 100	12.90%
				Weight	100	> 100	11.00%
09/23/1998	09/23/1998	Mussel	Development-Survival	Proportion Normal	68.6	> 68.6	2.20%
				Proportion Survived	17.2	34.3	8.03%
09/23/1998	09/23/1998	Topsmelt	Growth-Survival (7d)	7-day Survival	100	> 100	0.00%
				Biomass	100	> 100	11.10%
				Weight	100	> 100	11.10%
07/16/01, 12:30	07/17/01, 11:00	Mussel	Development-Survival	Proportion Normal	17.5	35	1.09%
				Proportion Survived	70	>70	12.42%
07/16/01, 12:30	07/17/01, 14:45	Topsmelt	Growth-Survival (7d)	7-day Survival	100	> 100	17.52%
				Biomass	100	> 100	19.34%
				Weight	100	> 100	23.58%
10/10/01, 12:10	10/11/01, 15:30	Mussel	Development-Survival	Proportion Normal	70	>70	3.26%
				Normal Survival	35	70	NR
10/10/01, 12:10	10/11/01, 16:20	Topsmelt	Growth-Survival (7d)	7-day Survival	100	>100	NR
				Biomass	100	>100	22.5%

NR= Not Reported

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HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

Benzene is the pollutant of concern for this facility. The benzene concentration in the effluent has varied throughout the term of the previous permit. Since December 1995, after the pretreatment system (activated carbon system) was installed, the results for benzene reported have been consistently low, ranging from 0.0005 to 0.018 mg/L. The Department has made the determination to not set a performance-based limit for benzene at this time due to the short duration of consistent data. The benzene effluent limit set in this permit will be based on the numeric human health-based criterion of daily maximum of not exceeding 71 µg/L for Outfall 001. The monitoring frequency will be monthly.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the sediment management standards.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated ground water quality standards (Chapter 173-200 WAC) to protect beneficial uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

USEPA Region X conducted island-wide groundwater studies and groundwater contaminant modeling as part of the Harbor Island Remedial Investigation (RI). RI findings include: 1) groundwater flows in a radial pattern in the center of the island, 2) dissolved-phase organic compounds (i.e., benzene) will not reach Elliott Bay or the Duwamish River at concentrations above surface water cleanup levels, and 3) surface water criteria rather than drinking water standards will be used to determine protection of groundwater since there is no current or planned future use of groundwater beneath Harbor Island for drinking water purposes. EPA's conclusions were verified during the RI data collection and site-specific modeling conducted by Shell under its Agreed Order with the Department of Ecology (the Department). The Department's Toxic Cleanup Program also conducted independent contaminant transport modeling and has also reached the same conclusions.

Shell Seattle Terminal will be implementing a cleanup action at the site. The cleanup action includes:

- Excavation of soil above cleanup levels in selected areas of the site
- Maintenance of protective gravel caps

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- Free product recovery and reuse or disposal
- Vapor extraction for enhanced product recovery
- Long-term groundwater monitoring to check the fate and transport modeling, the current groundwater quality data in the compliance wells, and the Cleanup Action Plan
- Additional testing (bioassay) or further remedial actions (e.g. air sparging) will be evaluated as part of an overall response action in the event that the groundwater cleanup action levels are exceeded
- Institutional controls including access controls and deed restrictions

In addition to implementing the cleanup action under MTCA, Shell Seattle Terminal implements Best Management Practices (BMPs) and periodic/refreshers training on spill prevention as part of the facility's operations. The facility's BMPs, described in the facility's Spill Prevention Control and Countermeasure (SPCC) Plan, Stormwater Pollution Prevention Plan, NPDES Permit Operation and Maintenance Plan, and Facility Oil Handling Manual, are conducted to prevent releases to groundwater and surface water. BMPs at the facility include: 1) visual inspections in tank farms, 2) pressure monitoring during product receipts, 3) visual inspections during product transfers, 4) hydrostatic testing of pipelines, 5) internal tank cleaning and inspections, 6) external tank inspections, 7) cathodic protection system inspections, 8) high & high/high liquid level alarm inspections, 9) pump inspections, 10) containment integrity inspections, and 11) gauging/inventory reconciliation before, during, and after product transfer.

Due to the above reasons, the Department has determined not to require installation of a liner at the main and north tank farms during this permit term.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

Monitoring for toluene, xylene, and flow is being required to further characterize the effluent. These pollutants could have a significant impact on the quality of the surface water.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-220-210).

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Monitoring for toluene, xylene, and flow are being required to further characterize the effluent. These pollutants could have a significant impact on the quality of the surface water.

SPILL PLAN

The Department has determined that the Permittee stores a quantity of chemicals that have the potential to cause water pollution if accidentally released. The Department has the authority to require the Permittee to develop best management plans to prevent this accidental release under section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080.

The Permittee has developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the Permittee to update this plan and submit it to the Department.

SOLID WASTE DISPOSAL

This proposed permit requires, under the authority of RCW 90.48.080, that the Permittee shall discharge no leachate of solid waste to waters of the state.

OPERATION AND MAINTENANCE MANUAL (O&M)

In accordance with state and federal regulations, the Permittee is required to take all reasonable steps to properly operate and maintain the treatment system [40 CFR 122.41(e)] and WAC 173-220-150 (1)(g). It has been determined that the implementation of the procedures in the O&M Manual is a reasonable measure to ensure compliance with the terms and limitations in the permit.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

Permit Condition S11 requires the Permittee to update the SWPPP.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual industrial NPDES permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending, or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Conditions G7 and G8 relate to permit renewal and transfer. Condition G9 requires the Permittee to control its production in order to maintain compliance with its permit.

Condition G10 prohibits the reintroduction of removed substances back into the effluent. Condition G11 states that the Department will modify or revoke and reissue the permit to conform to more stringent toxic effluent standards or prohibitions. Condition G12 incorporates by reference all other requirements of 40 CFR 122.41 and 122.42. Condition G13 notifies the Permittee that additional monitoring requirements may be established by the Department. Condition G14 requires the payment of permit fees. Condition G15 describes the penalties for violating permit conditions.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary, to meet water quality standards for surface waters, sediment quality standards, or water quality standards for Ground Waters, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The Department proposes that this proposed permit be issued for a period of five (5) years in order to be consistent with the state basin planning schedule for the Cedar/Green Basin.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Permit Application submitted to the Department on December 13, 2001.

Tsivoglou, E.C., and J.R. Wallace.

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1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

APPENDIX A—PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public Notice of Application (PNOA) was published on September 3 and September 10, 2002, in the *Seattle Times* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on May 31, 2003 in the *Seattle Times* to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
WA State Department of Ecology
Northwest Regional Office
3190 - 160th Avenue SE
Bellevue, WA 98008-5452

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30)-day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (425) 649-7201, or by writing to the address listed above.

APPENDIX B—REASONABLE POTENTIAL CALCULATIONS

ATTACHMENT I

DETERMINATION OF REASONABLE POTENTIAL

STEPS TO MAKING REASONABLE POTENTIAL DETERMINATION:

1. Calculate Ambient Water Quality Criteria (WQC) For Zinc As Total Recoverable.

The total recoverable receiving water criteria ($\mu\text{g/L}$) are calculated as:

Pollutant	Marine Water* Acute	Marine Water* Chronic
Zinc	95	85.6
* Water quality criteria as total recoverable metal ($\mu\text{g/L}$).		

The acute and chronic marine water criteria for zinc (dissolved) are given in FR Vol. 60, No. 86 as 90 $\mu\text{g/L}$, and 81 $\mu\text{g/L}$, respectively. The total recoverable value is calculated by dividing the dissolved criteria by the conversion factor of 0.946. Since the monitoring data submitted represents total recoverable zinc, these criteria were converted to be presented as total-recoverable zinc.

2. Calculate Maximum Expected Concentration (MEC).

Effluent Sample Results as Total Recoverable metal:

DATE	OUTFALL	PARAMETER	UNIT	TYPE	VALUE
8/1/1997	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	98
9/1/1997	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	286
10/1/1997	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	350
11/1/1997	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	273
12/1/1997	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	228
1/1/1998	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	254
2/1/1998	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	436
3/1/1998	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	236
4/1/1998	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	173
5/1/1998	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	223
6/1/1998	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	419
7/1/1998	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	149
9/1/1998	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	51.9
10/1/1998	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	253
11/1/1998	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	194
12/1/1998	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	316
1/1/1999	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	213
2/1/1999	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	205
3/1/1999	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	168
4/1/1999	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	202
5/1/1999	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	305
6/1/1999	001	ZINC, TOTAL RECOVERABLE	$\mu\text{g/L}$	MAX	124

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DATE	OUTFALL	PARAMETER	UNIT	TYPE	VALUE
7/1/1999	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	204
8/1/1999	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	322
10/1/1999	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	5
11/1/1999	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	318
12/1/1999	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	696
1/1/2000	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	256
2/1/2000	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	208
3/1/2000	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	321
4/1/2000	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	83.3
5/1/2000	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	247
6/1/2000	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	55.5
8/1/2000	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	48.6
9/1/2000	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	28.7
10/1/2000	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	339
11/1/2000	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	38
12/1/2000	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	129
1/1/2001	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	174
2/1/2001	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	161
3/1/2001	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	82.3
4/1/2001	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	202
5/1/2001	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	118
6/1/2001	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	57.6
7/1/2001	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	224
8/1/2001	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	79.7
9/1/2001	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	42
10/1/2001	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	153
11/1/2001	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	196
12/1/2001	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	220
1/1/2002	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	216
2/1/2002	001	ZINC, TOTAL RECOVERABLE	µg/L	MAX	245

The analytical method used for zinc was EPA method 200.7, an ICP method which has a detection limit of 10 µg/L.

The upper 95th percentile confidence level of the effluent samples values is 159 µg/L, based on a lognormal distribution and the assumption that the nondetect values are equal to half of the detection limit. The MEC exceeds the acute marine water quality criterion (acute marine water quality criterion was used for stormwater runoff). Therefore reasonable potential does exist, and a limit is required for zinc.

APPENDIX C—GLOSSARY

Acute Toxicity—The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

AKART—An acronym for “all known available and reasonable methods of treatment.”

Ambient Water Quality—The existing environmental condition of the water in a receiving water body.

Average Monthly Discharge Limitation—The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)—Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

Bypass—The intentional diversion of waste streams from any portion of a treatment facility.

Chronic Toxicity—The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)—The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance Inspection - Without Sampling—A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling—A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample—A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction Activity—Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building; construction of residential houses, office buildings, or industrial buildings; and demolition activity.

Daily Maximum Discharge Limitation—The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Engineering Report—A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Grab Sample—A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Industrial Wastewater—Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business; from the development of any natural resource; or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Mixing Zone—An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)—The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/state permits issued under both state and federal laws.

pH—The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Technology-based Effluent Limit—A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)—Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

State Waters—Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater—That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Upset—An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit—A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX D—SITE MAPS

APPENDIX E—RESPONSE TO COMMENTS